National Institute of Environmental Health Sciences

# Relationship between heat index and mortality of 6 major cities in Taiwan

**Author(s):** Sung TI, Wu PC, Lung SC, Lin CY, Chen MJ, Su HJ
**Year:** 2013
**Journal:** The Science of The Total Environment. 442: 275-281

**Abstract:**

Increased mortality, linked to events of extreme high temperatures, is recognized as one critical challenge to the public health sector. Therefore, this ecological study was conducted to assess whether this association is also significant in Taiwan and the characteristics of the relationship. Daily mean heat indices, from 1994 through 2008, were used as the predictor for the risk of increased mortality in populations from 6 major Taiwanese cities. Daily mortality data from 1994 through 2008 were retrieved from the Taiwan Death Registry, Department of Health, Taiwan, and meteorological data were acquired from the Central Weather Bureau. Poisson regression analyses using generalized linear models were applied to estimate the temperature-mortality relationship. Daily mean heat indices were calculated and used as the temperature metric. Overall, increased risk ratios in mortality were associated with increased daily mean heat indices. Significantly increased risk ratios of daily mortality were evident when daily mean heat indices were at and above the 95th percentile, when compared to the lowest percentile, in all cities. These risks tended to increase similarly among those aged 65. years and older; a phenomenon seen in the cities of Keelung, Taipei, Taichung, Tainan, and Kaohsiung, but not Chiayi. Being more vulnerable to heat stress is likely restricted to a short-term effect, as suggested by lag models which showed that there was dominantly an association during the period of 0 to 3. days. In Taiwan, predicting city-specific daily mean heat indices may provide a useful early warning system for increased mortality risk, especially for the elderly. Regional differences in health vulnerabilities should be further examined in relation to the differential social-ecological systems that affect them.

**Source:** http://dx.doi.org/10.1016/j.scitotenv.2012.09.068

## Resource Description

**Early Warning System:** ☑

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

**Exposure :** ☑

weather or climate related pathway by which climate change affects health

Temperature

**Temperature:** Extreme Heat

☑

**Geographic Feature:** ☑

resource focuses on specific type of geography

Ocean/Coastal, Urban

**Geographic Location:** ☑

resource focuses on specific location

Non-United States

**Non-United States:** Asia

**Asian Region/Country:** China

**Health Impact:** ☑

specification of health effect or disease related to climate change exposure

Injury

**Mitigation/Adaptation:** ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

**Population of Concern:** A focus of content

**Population of Concern:** ☑

populations at particular risk or vulnerability to climate change impacts

Elderly

**Resource Type:** ☑

format or standard characteristic of resource

Research Article

**Timescale:** ☑

time period studied

Time Scale Unspecified

**Vulnerability/Impact Assessment:** ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content